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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/553,419	BOECKING ET AL.	
	Examiner	Art Unit	
	Thomas M. Dougherty	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 June 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *31-63* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *34-36,38,40 and 44-49* is/are allowed.

6)☒ Claim(s) *31-33, 37, 39, 41-43 and 50-63* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Arguments

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 63 is yet rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 63 is not further limiting to the claim (31). Claim 31 definitively indicates that the hollow body houses the actuator, while claim 63 which includes all the language of claim 31 since it depends on it, refutes that recitation of the hollow body housing the actuator.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 31-33, 37, 39, 41-43, 50-53, 55-57, 60 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frank et al. (WO 99/08330, US equivalent document is US 6,998,761) in view of Onishi et al. (JP 55-134990). Frank et al. show (figs. 1, 7, 9, 11) an actuator unit, comprising a piezoelectric actuator (1) disposed in a hollow body (2), the hollow body (2) being embodied elastically and prestressing (see

the ABSTRACT) the actuator (1), a plurality of recesses (14) formed through the hollow body (2) a first seam (e.g. 16) in the hollow body extending parallel to the longitudinal axis of the hollow body (2). Frank et al. note that their hollow body Is made of at least one plate formed into the hollow body and then fixed by at least one connecting seam.

The seam shown extends from the top to the bottom therefore they are at each end.

The hollow body (2) is joined on its first end to an upper cover plate (3) or to an adjusting disk.

The hollow body (2) is radially fixed on its first end.

The hollow body (2) is fixed radially on its first end in the upper cover plate (3) in particular by means of an annular groove or a shoulder (8).

The hollow body (2) is fixed radially on its first end in the adjusting disk (3) in particular by means of an annular groove or a shoulder (8). Note in the applicants' figure 2 that the adjusting disc merely covers the top of the component and in effect is a cover plate.

The hollow body (2) is secured by its first end to the upper cover plate (3) by welding. See col. 1, lines 46-48.

The hollow body (2) is radially fixed on its second end (note 4 is connected to the bottom of the hollow body).

The hollow body (2) is joined on its second end to a lower cover plate (4) or to a coupler housing.

The hollow body (2) is fixed radially on its second end in the lower cover plate (4)

or in the coupler housing, in particular by means of an annular groove or a shoulder (8).

The hollow body (2) is secured by its second end (15) to the lower cover plate (5) by welding. Note that the top and bottom covers are essentially identical in how they are connected thus it is clear that the bottom cover plate is welded.

A plurality of recesses (14) are located one behind the other in a plane; and wherein the plane forms a right angle with the longitudinal axis of the hollow body (2).

There are an even number of recesses (14) in one plane. Note that there are ten recesses in each row of recesses in figure 7 when the hollow body is planar before completion of the body.

The hollow body has (2) a circular cross section.

The piezoelectric actuator (1) is disposed in the hollow body (2); and wherein the piezoelectric actuator (1) is stressed in compression by the prestressed hollow body (2).

Frank et al do not explicitly show two opposing seams.

Ohishi shows (Fig. 1) a piezoelectric actuator (1, 1') disposed in a hollow body (6), the hollow body (6) being embodied elastically and prestressing the actuator (see line 9 of the CONSTITUTION), a first seam in the hollow body (6) extending parallel to the longitudinal axis of the hollow body (6) and at least lone second seam at least on a first end portion of the hollow body (6) and located diametrically opposite the first seam. Note that there are two explicit seams as discussed in the PURPOSE and CONSTITUTION.

Onishi does not show a plurality of recesses formed through the hollow body.

It would have been obvious to one having ordinary skill in the art to employ the two seam invention of Onishi in the device of Frank et al. at the time of their invention since this facilitates "fabrication of the piezoelectric element unit" as noted by Onishi.

Claim 54 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frank et al. (WO 99/08330, US equivalent document is US 6,998,761) and Onishi (JP 55-134990) in view of Voigt et al. (US 6,984,942). Given the invention of Frank et al. and Onishi as noted above, they do not show the recesses are embodied in bonelike shape although they do show in fig. 3, recesses extending transversely to the longitudinal axis of the hollow body.

Voigt et al. show (e.g. figs. 1, 2A) an actuator unit, comprising a piezoelectric actuator (1) disposed in a hollow body (4), the hollow body (4) being embodied elastically and prestressing (see the ABSTRACT) the actuator (1), a plurality of recesses (41) formed through the hollow body (4).

Voigt et al. show recesses (41) are embodied in bonelike shape and extend transversely to the longitudinal axis of the hollow body (4).

While Voigt's, et al. device obviously has at least one seam, it is not clearly shown.

It would have been obvious to one of ordinary skill in the art to change the shape of the recesses in the combined invention of Frank et al. and Onishi to a shape that is bonelike such as is shown by Voigt et al. because absent an assertion of unexpected results, change to this arrangement does not make the invention patentably distinct. *In*

re Dailey, 357 F. 2d 669, 149 USPQ 47 (CCPA 1966). Additionally, such a shape results in a strong component. See col. 1, lines 52-58 in Voigt et al.

Claim 57-59 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frank et al. (WO 99/08330, US equivalent document is US 6,998,761) and Onishi (JP 55-134990) in view Kienzler et al. (WO 03/019688). Given the combined invention of Frank et al. and Onishi as noted above, they don't show a plurality of planar surfaces.

Kienzler et al. show (figs. 1-3) an actuator unit, comprising a piezoelectric actuator (see Abstract) disposed in a hollow body (1), the hollow body (1) being embodied elastically a plurality of recesses (8) formed through the hollow body (1) a first seam (e.g. 3) in the hollow body extending parallel to the longitudinal axis of the hollow body (1), and at least one second seam (also 3) at least on a first end portion of the hollow body (2) and located diametrically opposite (see fig. 3) the first seam (3).

A plurality of planes are provided with recesses (8); and that the planes extend parallel to one another.

The recesses (8) of two adjacent planes are offset from one another. Note that a planar surface (2) has recesses (8) while the neighboring planar surface (2) has a recess which is offset and above or below the first mentioned recesses.

The offset of the recesses of two adjacent planes is equal to half the repeat of the recesses in one plane.

The cross section of the hollow body (1) has the form of a regular polygon.

Kienzler et al. do not note prestressing the actuator.

It would have been obvious to one having ordinary skill in the art to employ the hollow body of Kienzler et al. in prestressing the actuator it is meant to contain for the purpose of achieving uniformity of design and installation, such as is noted by Frank et al., see col. 1, lines 38-43 in combination with Onishi.

Claim 63, as best understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Frank et al. (WO 99/08330) in view of Onishi. Given the combined invention of Frank et al. the piezoelectric actuator is not shown as being disposed outside of the prestressed hollow body.

It would have been obvious to one having ordinary skill in the art to locate the piezoelectric actuator of the combined invention of Frank et al. and Onishi outside of the prestressed hollow body at the time of their invention since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse,* 86 USPQ 70.

Allowable Subject Matter

Claims 34-36, 38, 40, and 44-49 are allowed.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Additional prior art cited reads on aspects of the inveniton.

Direct inquiry to Examiner Dougherty at (571) 272-2022.

tmd

tmd

July 5, 2007

Thomas M. Dougherty

TOM DOUGHERTY
PRIMARY EXAMINER